2018 L2 Physics External Standards Material (from NZQA NCEA standards as of Feb 2012)

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| **P2.3 waves (91170) 4 credits** | *Light:*   * reflection in curved mirrors, * refraction through lenses, * refraction, * total internal reflection & critical angle at a plane boundary. | | ***Waves:***   * reflection and refraction at a plane boundary including phase and wave parameter changes if applicable * superposition of pulses * diffraction through a slit * 2-point source interference (qualitative). | |
| *Relationships:* or ;  or ;    Note: compared to old standard (exam) these topics are no longer overtly included:  diffraction around barriers, properties of electromagnetic waves | | | |
| **P2.4 mechanics (91171) 6 credits** | ***Motion*:**   * constant acceleration in a straight line * free fall under gravity * projectile motion * circular motion (constant speed with one force only providing centripetal force).   *Force*:   * force components * vector addition of forces * unbalanced force and acceleration | * equilibrium (balanced forces and torques) * centripetal force * force and extension of a spring.   *Momentum and Energy*:   * momentum * change in momentum in one dimension and impulse * impulse and force * conservation of momentum in one dimension * work * power and conservation of energy * elastic potential energy. | | |
| *Relationships:*    Note: compared to old standard (exam) these topics are no longer overtly included:  Relative motion, change in velocity; velocity vector components, elastic/inelastic collisions | | | |
| **P2.6 electricity and electromagnetism (91173) 6 credits** | *Static Electricity*:  * uniform electric field * electric field strength * force on a charge in an electric field * electric potential energy * work done on a charge moving in an electric field.  *Electromagnetism*:  * force on a current carrying conductor in a magnetic field * force on charged particles moving in a magnetic field * induced voltage generated across a straight conductor moving in a uniform magnetic field. | | | *DC Electricity*:  * parallel circuits with resistive component(s) in series with the source * circuit diagrams * voltage * current * resistance * energy * power. |
| *Relationships:*  Note: compared to old standard (exam) these topics are no longer overtly included:  DC motor; electrical properties of diodes; simple generator. | | | |